Stoller
Grand Junction Office established 1959

C-4125
Log Data Report

Borehole Information:

Borehole: C-4125			Site: West of C Tank Farm		
Coordinates (WA St Plane)		GWL[1] (ft): 268		GWL Date: 08/15/03	
North (Estimated)	East (Estimated)	Drill Date	Ground Level Elevation	Total Depth (ft)	Type
136500	575025	08/03	Not available	309.0	Becker

Casing Information:

Casing Type	Stickup (ft)	Outer Diameter (in.)	Inside Diameter (in.)	Thickness (in.)	Top (ft)	Bottom (ft)
Threaded steel	1.7	11.0	10.0	0.50	+1.7	30
Becker	3.1	6.24	6.0	0.12	+3.1	309.0
Becker	2.7	9.0	8.0	0.5	+2.7	309.0

Borehole Notes:

The casing dimensions are derived from published values for Becker drill casing. Casing thicknesses at the joints are 0.875- and 0.240-in. for the 8- and 6-in. casings, respectively. The Fluor Hanford drilling supervisor provided the total drilling depth, depth to water, and borehole coordinates. Ground level elevation was not available. Logging data acquisition is referenced to the ground surface.

Logging Equipment Information:

Logging System:	Gamma 1E		Type:	SGLS (70%) SN: 34TP40587A
Calibration Date:	07/03	Calibration Reference:	GJO-2003-468-TAC	
		Logging Procedure:	MAC-HGLP 1.6.5, Rev. 0	

Spectral Gamma Logging System (SGLS) Log Run Information:

Log Run	1	2 Repeat	3		
Date	08/15/03	08/16/03	08/16/03		
Logging Engineer	Spatz	Spatz	Spatz		
Start Depth (ft)	301.0	121.0	89.0		
Finish Depth (ft)	90.0	90.0	25.0		
Count Time (sec)	100	100	100		
Live/Real	R	R	R		
Shield (Y/N)	N	N	N		
MSA Interval (ft)	1.0	1.0	1.0		
ft/min	N/A[2]	N/A	N/A		
Pre-Verification	AE018CAB	AE019CAB	AE019CAB		
Start File	AE018000	AE019000	AE019032		
Finish File	AE018211	AE019031	AE019096		

Log Run	1	2 Repeat	3		
Post-Verification	AE018CAA	AE019CAA	AE019CAA		
Depth Return Error (in.)	-1	N/A	N/A		
Comments	Fine-gain adjustment made after files -102, -144, -177, -182.	No fine-gain adjustment.	No fine-gain adjustment.		

Logging Operation Notes:

Spectral gamma logging was performed in this borehole on August 15 and 16, 2003. Logging was conducted with a centralizer on the sonde. Measurements are referenced to ground surface. A repeat section was collected in this borehole to evaluate system performance. No logging was performed between the ground surface and 25 ft because a 10-in. casing was present in addition to the 6- and 8-in. casings. Logging depth achieved was 301 ft, 8.0 ft less than the reported drilling depth.

Analysis Notes:

Analyst:	Henwood	Date:	08/28/03	Reference:	GJO-HGLP 1.6.3, Rev. 0

Pre-run and post-run verifications for the logging system were performed before and after data acquisition. Acceptance criteria were met.

A combined casing correction for 0.620-in.-thick casing (0.5 +.12 in.) was applied below 25 ft for the 8- and 6-in. casings. The combined thickness at casing joints is 1.115 in. This thickness results in a significant reduction in gamma activity detection as the detector passes by a casing joint. However, it is not practical to correct individual data points for the effect of casing joints. The influence of the thick joints is apparent in the total gamma and ^{40}K logs where reduced count rates and concentrations are exhibited at approximately 10-ft depth intervals. For the depth interval between 25 and 30 ft a correction for 1.12-in. casing was applied where 10, 6, and 8-in. casings were present.

SGLS spectra were processed in batch mode using APTEC SUPERVISOR to identify individual energy peaks and determine count rates. Concentrations were calculated with an EXCEL worksheet template identified as G1EJul03.xls using efficiency functions and corrections for casing, water, and dead time as determined from annual calibrations. Dead time corrections are applied where dead times exceed 10.5 percent; no dead times in excess of 10.5 percent were encountered. Correction for water was applied to the data below 268 ft.

Log Plot Notes:

Separate log plots are provided for the man-made radionuclide (^{137}Cs) detected in the borehole, naturally occurring radionuclides (^{40}K, ^{238}U, ^{232}Th [KUT]), a combination of man-made, KUT, and dead time, and total gamma plotted with dead time. For each radionuclide, the energy value of the spectral peak used for quantification is indicated. Unless otherwise noted, all radionuclides are plotted in picocuries per gram (pCi/g). The open circles indicate the minimum detectable level (MDL) for each radionuclide. Error bars on each plot represent error associated with counting statistics only and do not include errors associated with the inverse efficiency function, dead time correction, casing corrections, or water corrections. A repeat log section is also included.

Results and Interpretations:

^{137}Cs was the only man-made radionuclide detected in this borehole. ^{137}Cs was detected at a few sporadic locations in the borehole near its MDL of approximately 0.2 pCi/g.

The repeat sections indicated good agreement of the naturally occurring KUT.

[1] GWL – groundwater level
[2] N/A – not applicable

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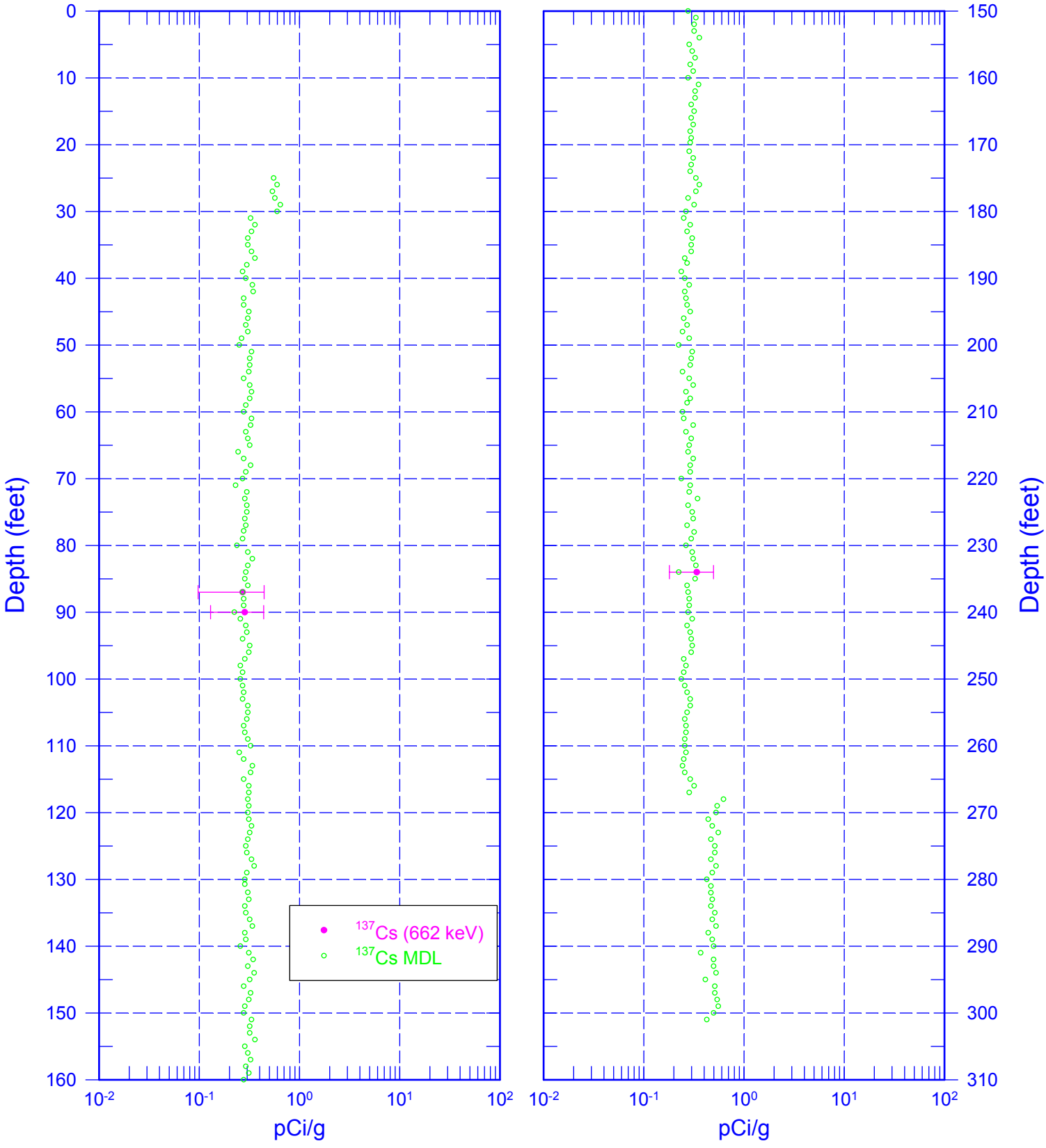
Man-Made Radionuclides



Zero Reference = Ground Surface

Last Log Date - 08/16/03

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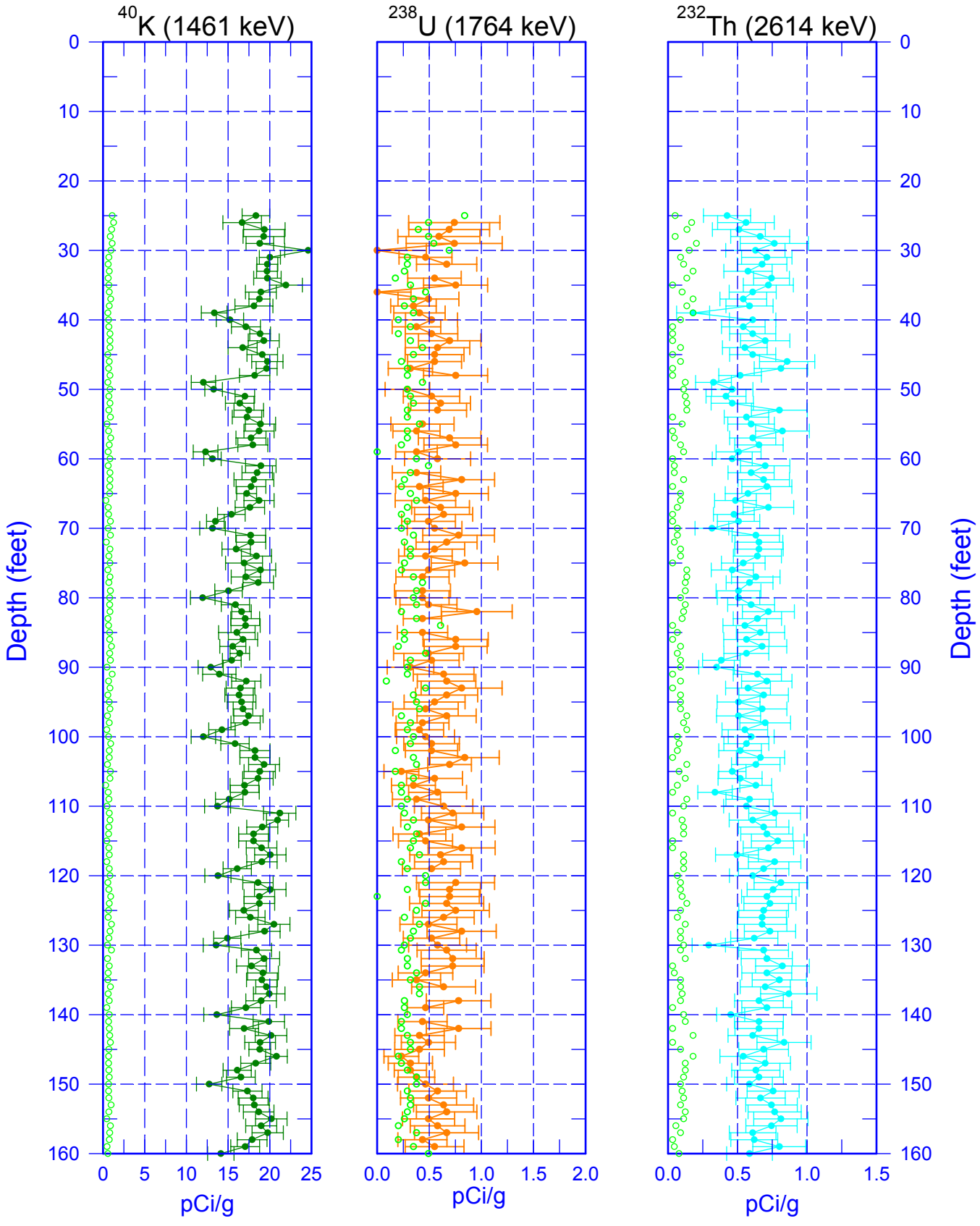
Natural Gamma Logs

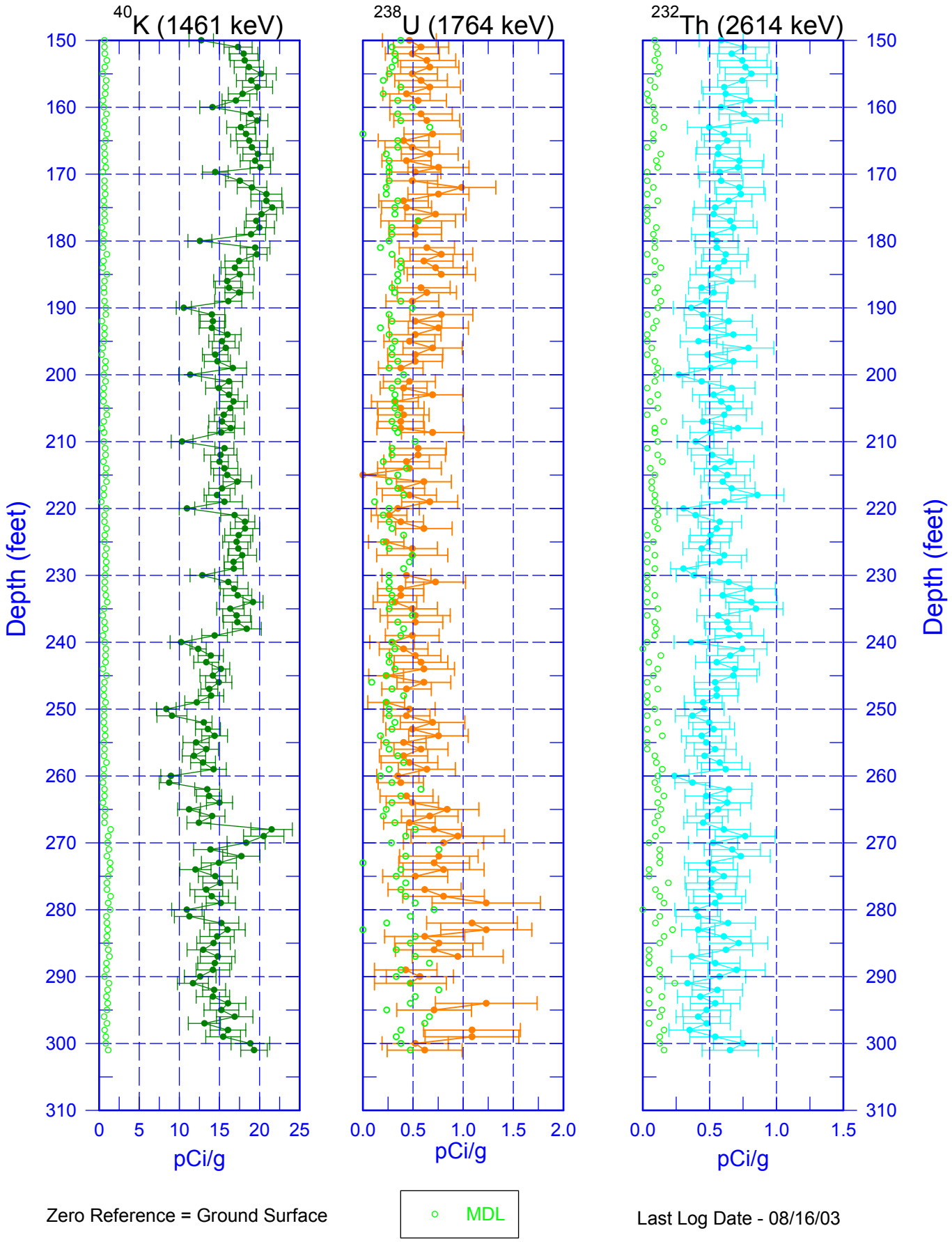


Zero Reference = Ground Surface

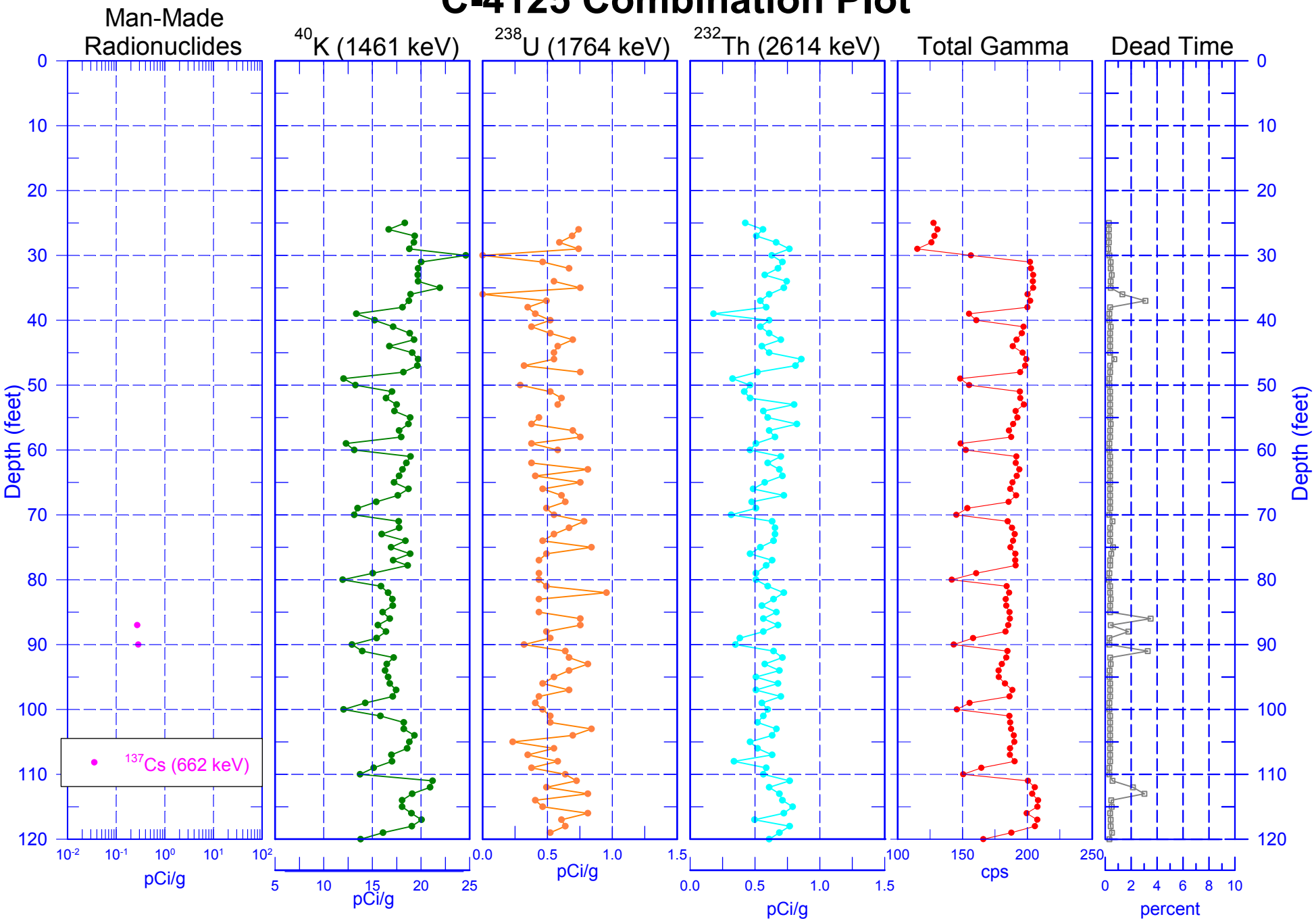
MDL

Last Log Date - 08/16/03

C-4125
Natural Gamma Logs



C-4125 Combination Plot



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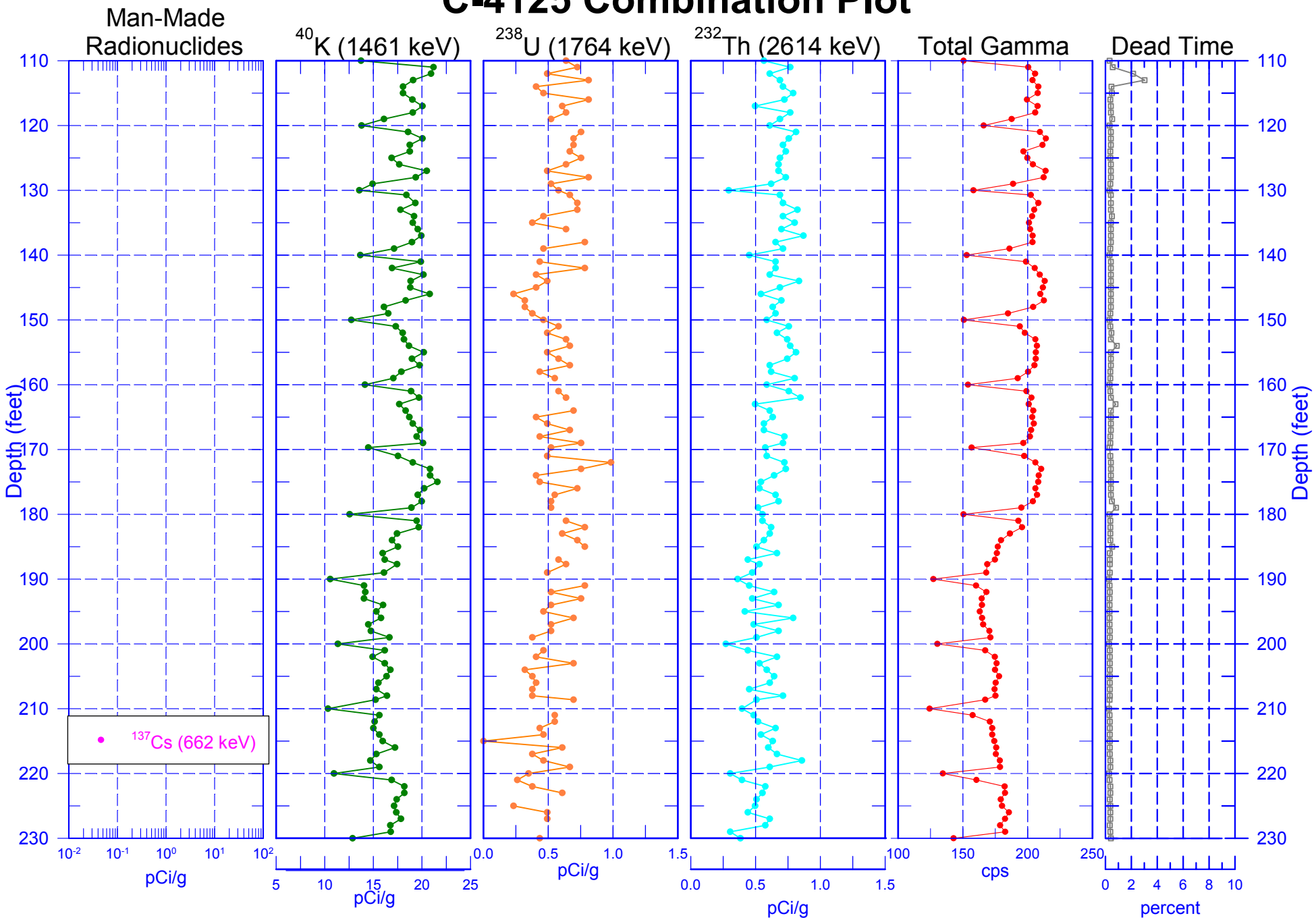
C-4125 Combination Plot



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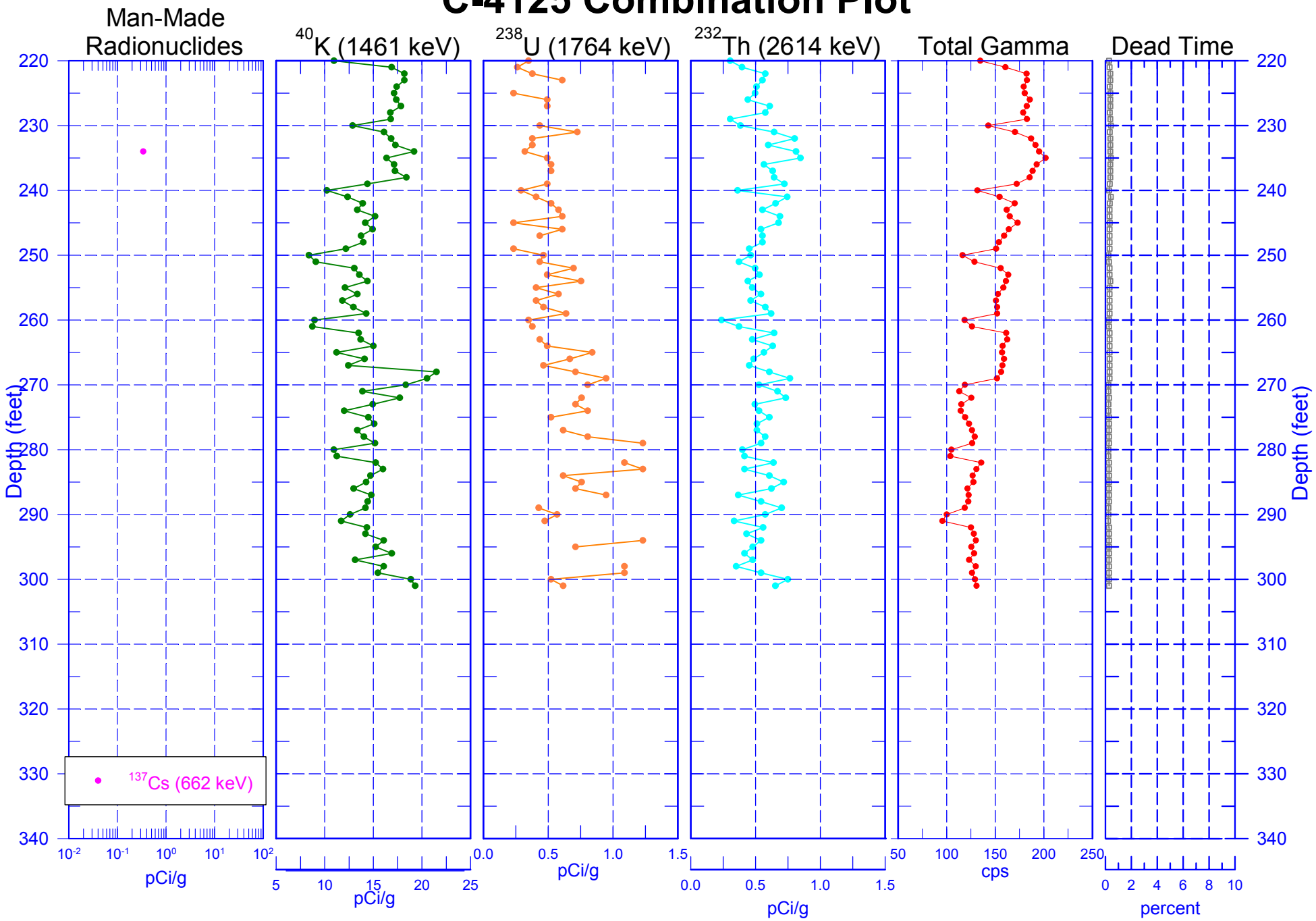

Zero Reference = Ground Surface

Last Logging Date - 08/16/03

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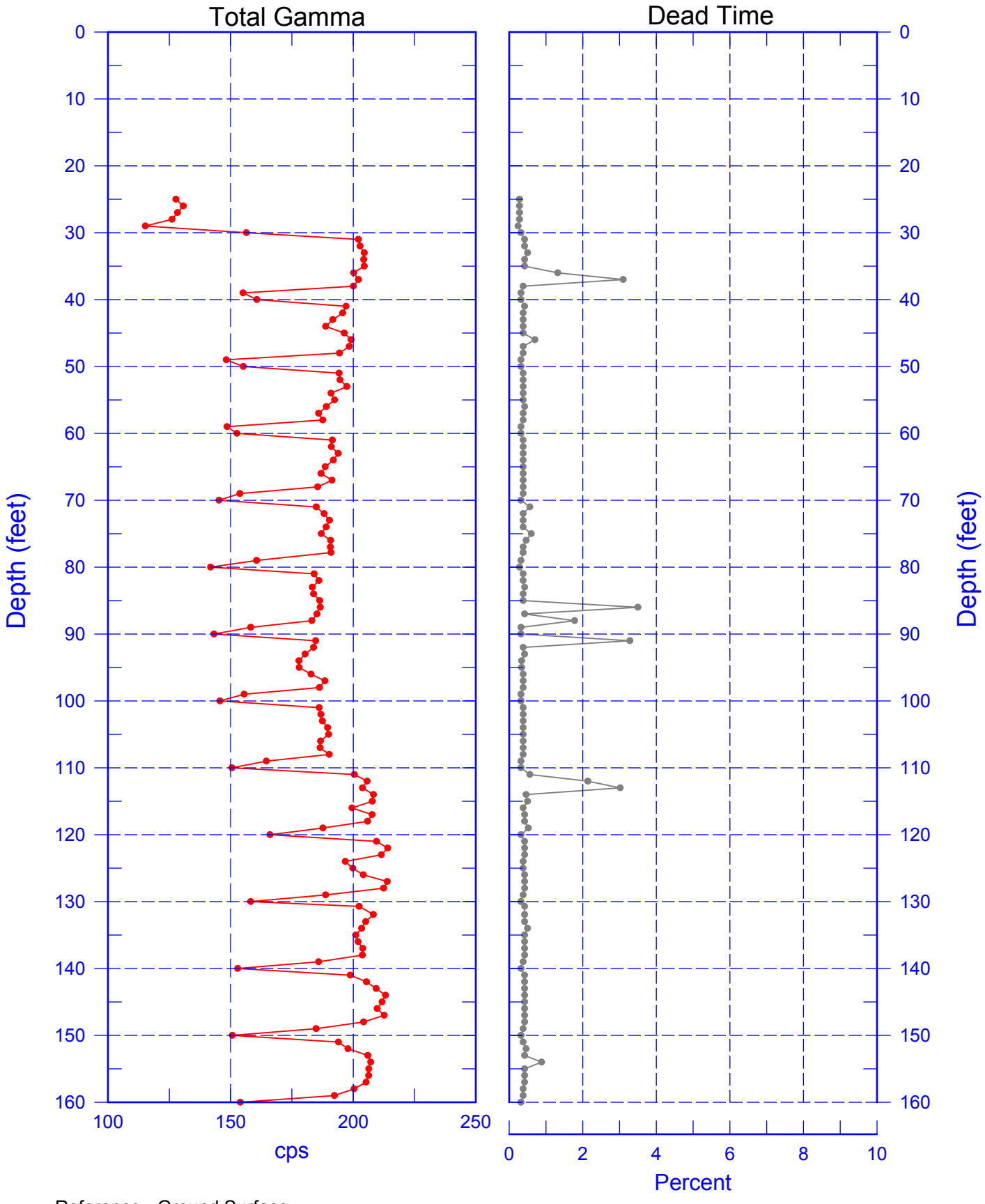
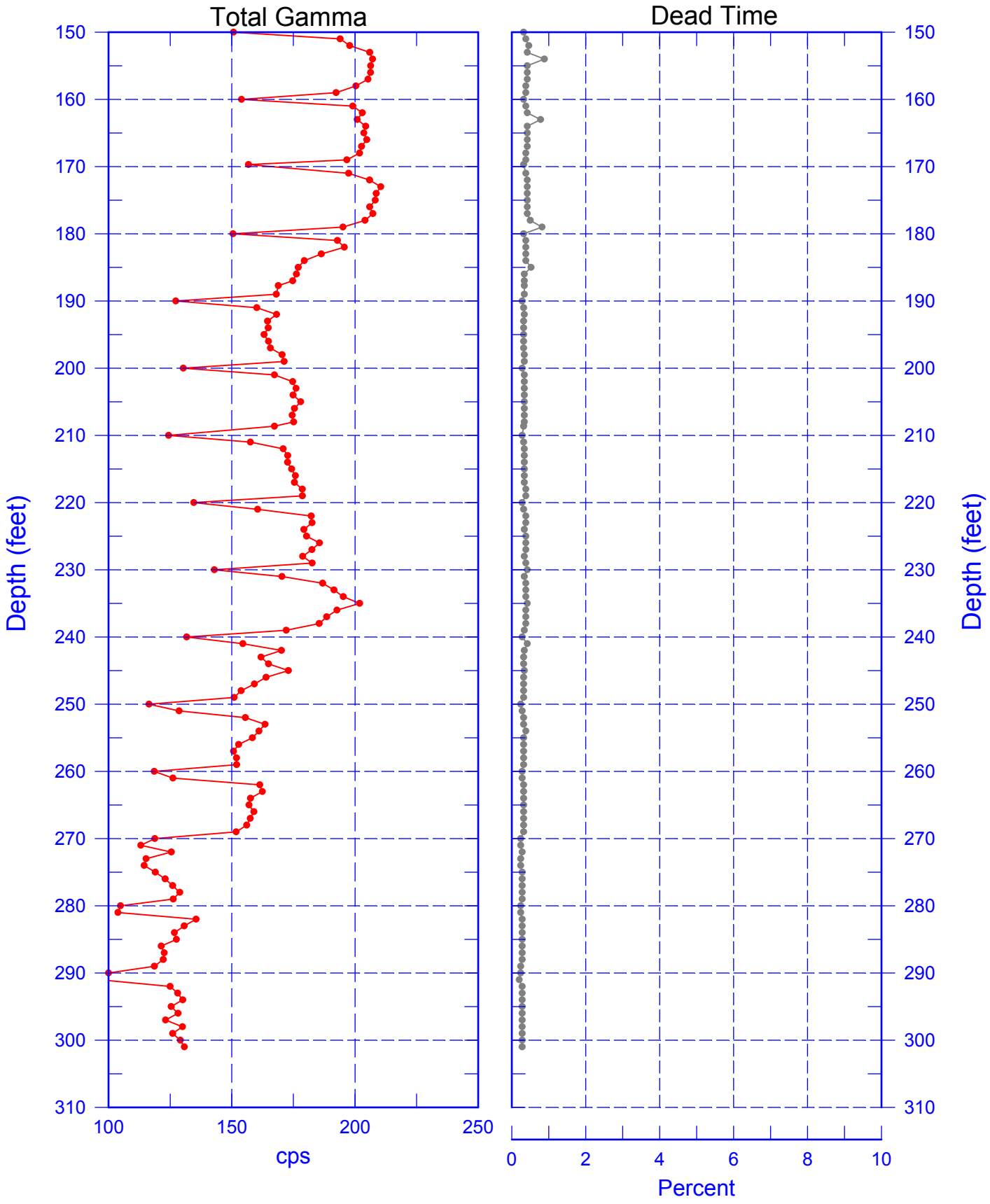
Total Gamma & Dead Time



Reference - Ground Surface

Last Log Date - 08/16/03

C-4125
Total Gamma & Dead Time



Reference - Ground Surface

Last Log Date - 08/16/03

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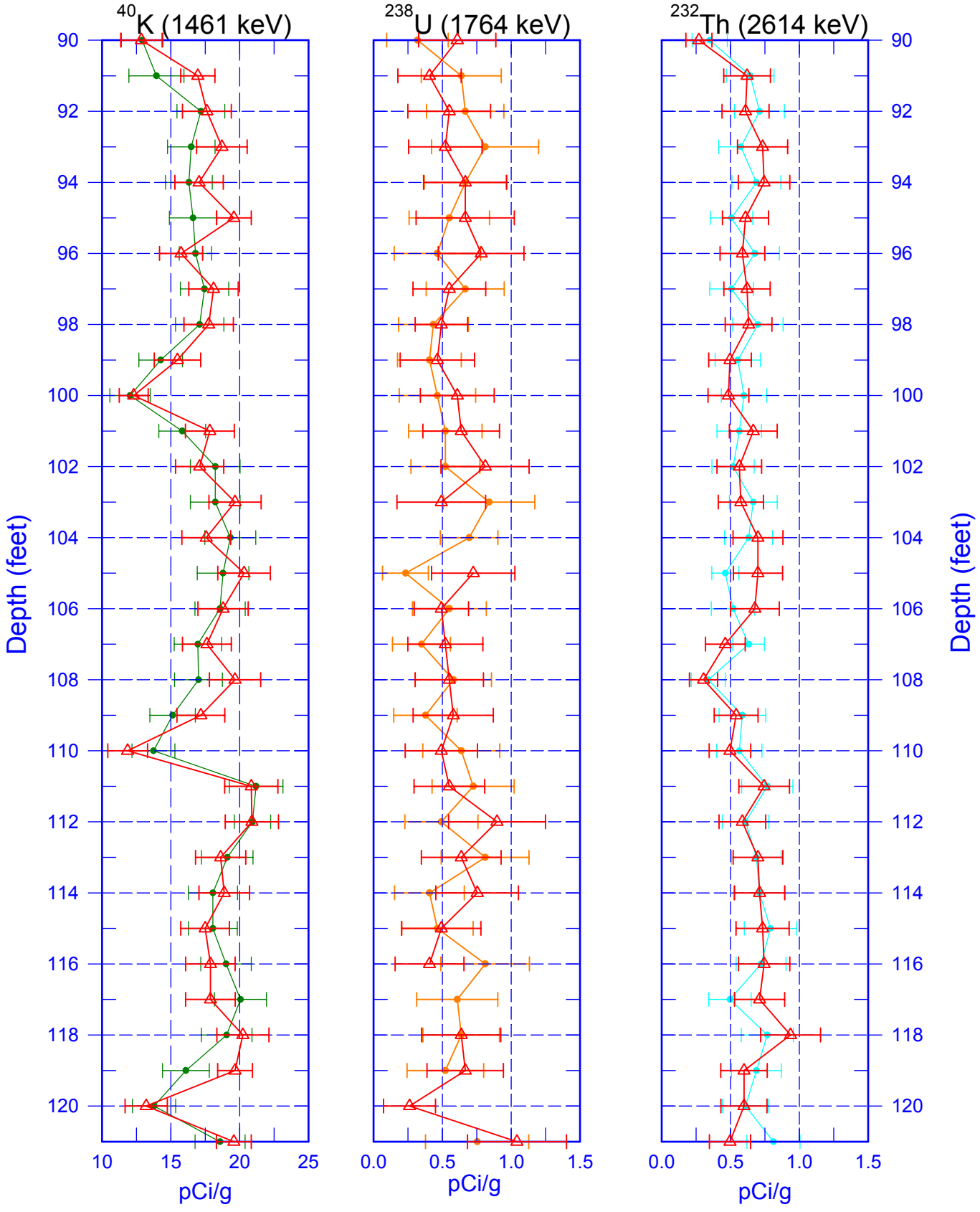
Repeat Section of Natural Gamma Logs



Zero Reference = Ground Surface

Last Log Date - 08/16/03